

### REMARKS

A Final Office Action mailed May 25, 2004 has been received and carefully reviewed. Claims 1-81 are pending in the application. Claims 1-16 and 34-81 have been canceled. Claims 17-20, 22, 27 and 33 were rejected.

Applicants appreciate Examiner's indication of allowability of claims 21, 23-26 and 28-32.

In paragraph four on page four of the Office Action, Claims 17-19, 27 and 33 were rejected under § 102(b) over the article "Vector set partitioning with classified successive refinement VQ for embedded wavelet image coding" to Mukherjee et al.

In paragraph six on page six of the Office Action, Claims 20 and 22 were rejected under §103(a) over Mukherjee in view of US 5629778 to Reuman.

In paragraph seven on page 6 of the Office Action, Claims 21, 23-26, and 28-32 were objected to.

Applicants respectfully traverse the §§ 102(b) and 103(a) rejections and claim objections. Applicants respectfully assert that the requirements for either a § 102(b) or a §103(a) rejection are not present and a *prima facie* rejection fails because the Office Action fails to cite a reference or references that teach, disclose or suggest all the claim limitations of Applicants' application.

Applicants' application is for a data compression system with a transformer for "applying a linear analysis transform to decorrelate data into transform coefficients using transform equations, the transformer reducing errors of the transform by testing at least one number resulting from an incremental calculation of transform coefficients during a transform, determining whether to perform a corrective action based upon the testing and performing the corrective action when a corrective action is determined to be needed." More specifically, the instant application requires "applying a linear analysis transform to decorrelate data into transform coefficients using transform equations, the transformer reducing errors of the transform by testing at least one number resulting from an incremental calculation of transform coefficients *during* a transform." (emphasis added)

Mukherjee, unlike the instant application, is a technical paper discussing results of “extending set partitioning to scan vectors of wavelet coefficients.” *See* the Abstract. Mukherjee further states in the Abstract, “[c]oding results are presented to demonstrate that the vector-based approach (without arithmetic coding) surpasses the scalar counterpart (also without arithmetic coding), in the mean-squared error sense, for most images at low bitrates.” This statement from the Abstract is merely a synopsis of the discussion that follows in part 3 of the paper and of figure 3 which shows “coding results for the Barbara image.” Additionally, at page 26, third line in first column, Mukherjee states, “[i]n this paper, we focus only on the basic non-arithmetic coded vector set partitioning, though we realize that the additional overheads of arithmetic coding on the vector significance bits will further improve the coding results.” In view of this statement, the above-mentioned statement from the Abstract is merely comparing a vector-based approach with a scalar approach to prove the superiority of the vector-based approach used in the vector set partitioning process. By the nature of the above statement from the Abstract being an explanation, it is not performed during the process for achieving “vector set partitioning with classified successive refinement VQ for embedded wavelet image coding.” Thus, Mukherjee does not disclose, teach or suggest “testing at least one number resulting from an incremental calculation of transform coefficients *during* a transform,” from Applicants’ application.

Moreover, Mukherjee states at page 26, second full-paragraph, “[n]ote that the use of the  $L_2$  -norm(magnitude) in determining significance of a vector in a pass is justified for orthogonal wavelets, because it follows from Parseval’s relationship that the squared magnitude error in quantization of the vectors contribute additively to the reconstruction mean-squared-error,” and continues at the same paragraph “under the assumption that bi-orthogonal wavelets are approximately orthogonal, the  $L_2$  -norm will still be the best criterion to use to determine the significance of a vector in a pass.” Again, Mukherjee is explaining why  $L_2$  -norm is superior over other approaches by likening the  $L_2$  -norm approach characteristics with characteristics of Parseval’s relationship. The  $L_2$  -norm approach does not, however, disclose, teach or suggest testing “at least one number

resulting from an incremental calculation of transform coefficients *during* a transform,” from Applicants’ application.

Furthermore, the instant application requires “determining whether to perform a corrective action *based* upon the testing and performing the corrective action when a corrective action is determined to be needed.” (emphasis added)

Mukherjee, on the other hand, does not assert “testing at least one number resulting from an incremental calculation of transform coefficients” and therefore does not disclose, teach or suggest to “perform a corrective action *based* upon the testing.” (emphasis added)

The Office Action incorrectly asserts that “the corrective action in Mukherjee is the thresholding procedure for each pass, in which ‘each pass ascertains as significant the set of vectors that lie within a HV-dimensional shell’, and ‘[e]ach new pass yields a new set of vectors which have magnitudes higher than the threshold associated with the pass.’” This is because the refinement passes in Mukherjee are a constant in the process for the refinement process. Thus, each time a refinement procedure is performed, multiple passes are included without discretion. Therefore, Mukherjee does not disclose, teach or suggest “*determining* whether to perform a corrective action based upon the testing and performing the corrective action when a corrective action is determined to be needed.” (emphasis added)

Reuman fails to remedy the deficiencies of Mukherjee. Reuman focuses on a method and apparatus for reduction of image data compression noise. Reuman does not mention test or testing anywhere. Because Reuman does not perform tests on numbers resulting from an incremental calculation of transform coefficients, Reuman cannot take corrective action based on the testing. Therefore, Reuman too, does not teach, disclose or suggest “the transformer reducing errors of the transform by testing at least one number resulting from an incremental calculation of transform coefficients during a transform,” or “determining whether to perform a corrective action based on the testing and performing the corrective action when a corrective action is determined to be needed” from the instant application.

Mukherjee does not teach, disclose or suggest all of the limitations of Applicants' application, thus the Section 102 rejection is improper and should be withdrawn. Because the combination of Mukherjee and Reuman fails to teach, disclose or suggest all of the elements of at least claim 17, the Section 103 rejection is improper. Accordingly, Applicants request that the Section 103 rejection be withdrawn.

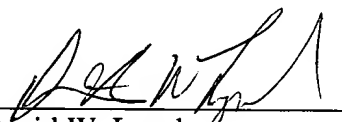
Dependent claims 18-33 are also patentable over the references because they incorporate all of the limitations of corresponding independent claim 17. Further, dependent claims 18-33 recite additional novel elements and limitations. Applicants reserve the right to argue independently the patentability of these additional novel aspects. Therefore, Applicants respectfully submit that dependent claims 18-33 are patentable over the cited references.

On the basis of the above amendments and remarks, it is respectfully submitted that the claims are in immediate condition for allowance. Accordingly, reconsideration of this application and its allowance are requested.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Attorney for Applicants, David W. Lynch, at 651-686-6633 Ext. 116.

Respectfully submitted,  
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Date: July 19, 2004

By:   
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